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On a Small Collection of Thailand Ferns

AUTHOR(S):

Tagawa, Motoji; Iwatsuki, Kunio

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On a Small Collection of Thailand Ferns

by

Motozi TAGAWA and Kunio IWATSUKI*

In the extent to which its ferns have been collected and studied, Thailand has remained behind Indo-China and Malaya. We have as yet no inclusive literature on the Thailand ferns. While the flowering plants may be included a little at a time in the *Florae Siamensis Enumeratio*, it may take a long time before a treatment of the ferns of Thailand is undertaken.

The senior author has had an opportunity to make a short botanical trip in Thailand from March to April in 1965. Our collection contains 98 species enumerated below, of which 7 are unnamed; among them 19 species have been mentioned in no literature as to their occurrence in Thailand. We felt that it might make an important contribution to the completion of the Thailand fern flora to publish an annotated list of our small collection. In the present enumeration, families and subfamilies are, for convenience, arranged in accordance with Holttum's system. The specimens referred to here are all kept in the herbarium of our department (KYO) and a set of duplicates has been contributed to the Forest Herbarium (BKF) of the Royal Forest Department at Bangkok.

We are heartily grateful to Mr. Tem Smitinand, who has been kind enough to offer us many helpful suggestions and advices. Thanks are also due to Mr. I. Yamada who co-operated faithfully with the senior author during the short trip.

LYCOPODIACEAE

Lycopodium L.

1. **Lycopodium pinifolium** Blume, Enum. Pl. Jav. **2**: 264. 1828, non Kaulf. 1824.

PUKET. Trang : Khao Chong, on tree trunk in evergreen forest, ca. 100m alt., T-160.**

Java to New Guinea and the Philippines, also on the Malay Peninsula. First record for Thailand.

The name long used for this species is doubtlessly invalid, and Herter proposed a new name, *Urostachys piscium* Hert. Ind. Lycopod. 75. 1949. We are uncertain which later name, if any, is a true synonym. To avoid a new name-combination in

* Department of Botany, Faculty of Science, Kyoto University.

** T-No. means the field number of specimen collected by M. Tagawa and I. Yamada.

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Lycopodium or *Huperzia*, we prefer therefore to continue here to use the traditional name, *L. pinifolium*.

2. ***Lycopodium cernuum*** L. Sp Pl. **2**: 1103. 1753.

PUKET. Trang : Khao Chong, open roadside earthbank, ca. 100m alt., T-168.

Widely distributed in the tropics and subtropics of the World.

SELAGINELLACEAE

Selaginella Beauv.

1. ***Selaginella argentea*** (Wall. ex Hook. et Grev.) Spring, Bull. Acad. Brux. **10**: 137. 1843; Alston, Gard. Bull. S. S. **8**: 49. 1934, in Lecomte, Fl. Gén. Indo-Chine **7**(2): 571. 1951.

PUKET. Trang : Khao Chong, dry rock at edge of evergreen forest, ca. 100m alt., T-159.

Malay Peninsula.

2. ***Selaginella delicatula*** (Desv.) Alston, Journ. Bot. **70**: 282. 1932, Gard. Bull. S. S. **8**: 47. 1934, in Lecomte, Fl. Gén. Indo-Chine **7**(2): 576. 1951.

PUKET. Trang : Khao Chong, moist ground in evergreen forest, ca. 100m alt., T-190.

South China and Taiwan to India, south to Malaysia.

3. ***Selaginella willdenowii*** (Desv.) Baker, Gard. Chron. **1867**: 783, 950; Alston in Lecomte, Fl. Gén. Indo-Chine **7**(2): 581. 1951.

PUKET. Trang : Khao Chong, rather dry evergreen forest, ca. 100m alt., T-169.
Indo-China, Malay Peninsula, Sumatra and Java.

4. ***Selaginella helferi*** Warb. Monsunia **1**: 107, 121. 1900; Alston in Lecomte, Fl. Gén. Indo-Chine **7**(2): 582. 1951.

PAYAP. Chiangmai : Doi Sutep, moist humus rich ground by stream in evergreen forest, ca. 1000m alt., T-27.

Assam and Burma to Kweichow and Kwangsi, south to northern Thailand, Laos, Tonkin and Cochin-China.

5. ***Selaginella*** sp.

PAYAP. Chiangmai : Doi Sutep, dry roadside bank in deciduous forest, ca. 900m alt., T-48.

Our material is sterile and furthermore in rather poor condition. The positive identification is therefore impossible to us.

MARATTIACEAE

Angiopteris Hoffm.

No present-day pteridologist, if of good sense, know how to dispose of the species-discrimination of *Angiopteris*. We here classify our collection roughly into

four "species" under the name of *Angiopteris* sp.

1. **Angiopteris** sp.

PAYAP. Chiangmai : Doi Suteh, evergreen forest by stream, ca. 900m alt., T-47.

2. **Angiopteris** sp.

PAYAP. Chiangmai : Doi Suteh, in evergreen forest by stream, ca. 1000m alt., T-32.

3. **Angiopteris** sp.

PAYAP. Chiangmai : Doi Suteh, in evergreen forest by stream, ca. 1000m alt., T-33.

4. **Angiopteris** sp.

PUKET. Trang : Khao Chong, clearing of evergreen forest, 100-200m alt., T-191.

SCHIZAEACEAE

Lygodium Sw.

1. **Lygodium polystachyum** Wall. ex Moore, Gard. Chron. **1859**: 671; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 8. 1929; C. Chr. Contr. U.S. Nat. Herb. **26**: 329. 1931; Holtt. Rev. Fl. Mal. **2**: 55. 1954, Fl. Malesiana II. **1**(1): 46. 1959, Dansk Bot. Ark. **20**: 16. 1961.

PUKET. Trang : Trang, in light shade on dry hillside, at lowland, T-145; Khao Chong, open place at edge of evergreen forest, ca. 100m alt., T-161.

Assam, Burma and Yunnan, south to Indo-China and the Malay Peninsula.

2. **Lygodium flexuosum** (L.) Sw. Schrad. Journ. Bot. **1800**(2): 106. 1801; Christ, Bot. Tidsskr. **24**: 112 1901; C. Chr. Contr. U. S. Nat. Herb. **26**: 329. 1931; Holtt. Rev. Fl. Mal. **2**: 57. 1954, p. p., Fl. Malesiana II. **1**(1): 53. 1959, Dansk Bot. Ark. **20**: 15. 1961; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 85. 1958.

PAYAP. Chiangmai : Doi Suteh, edge of mixed forest, ca. 800m alt., T-22.

Ceylon, from the Himalayas to South China, through Malaysia south to northern Queensland and southeast to Melanesia.

3. **Lygodium salicifolium** Pr. Suppl. Tent. Pterid. 102. 1845, p. p.; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 8. 1929; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 85. 1958; Holtt. Fl. Malesiana II. **1**(1): 51. 1959, Dansk Bot. Ark. **20**: 16. 1961.

PUKET. Trang : Trang, in light shade on dry hillside, at lowland, T-146; Khao Chong, open place at edge of evergreen forest, ca. 100m alt., T-162.

Assam to Yunnan, from Thailand and Indo-China southeast to New Guinea.

GLEICHENIACEAE

Dicranopteris Bernh.

1. **Dicranopteris currani** Copel. Phil. Journ. Sci. **81**: 4. 1952; Holtt. Fl. Malesiana

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II. **1(1):** 31. 1959.

Gleichenia linearis var. *malayana* (Christ) v. A. v. Ros.; Holtt. Rev. Fl. Mal. **2:** 70. 1954.

PUKET. Trang : Khao Chong, open steep slope at edge of evergreen forest, ca. 100m alt., T-178.

Malay Peninsula to Lesser Sunda Islands, Celebes and the Philippines. First record for Thailand.

2. **Dicranopteris linearis** (N. L. Burm.) Underw. Bull. Torrey Bot. Cl. **34:** 249. 1907; C. Chr. Contr. U. S. Nat. Herb. **26:** 330. 1931; Holtt. Fl. Malesiana II. **1(1):** 33. 1959. — *Gleichenia linearis* (N. L. Burm.) Clarke; Christ, Bot. Tidsskr. **24:** 111. 1901; Holtt. Rev. Fl. Mal. **2:** 68. 1954.

PUKET. Trang : Khao Chong, open steep slope at edge of evergreen forest, ca. 100m alt., T-177.

Widely distributed in the tropics and subtropics of the Old World, extending north to the Himalayas and Japan, south to Australia and Polynesia.

This species is classified into many varieties (vide Holtt. 11.cc.); our specimen may be referable to var. *linearis*.

HYMENOPHYLLACEAE

Vandenboschia Copel.

1. **Vandenboschia maxima** (Blume) Copel. Phil. Journ. Sci. **67:** 54. 1938. — *Trichomanes maximum* Blume; Copel. Phil. Journ. Sci. **51:** 217. 1933; Holtt. Rev. Fl. Mal. **2:** 107. 1954.

PUKET. Trang : Khao Chong, moist rocky place by stream in evergreen forest, 100-200m alt., T-218.

Throughout Malaysia, east to Tahiti.

Crepidopteris Copel.

1. **Crepidopteris humilis** (Forst.) Copel. Phil. Journ. Sci. **67:** 58. 1938. — *Trichomanes humile* Forst.; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8:** 1. 1929; Copel. Phil. Journ. Sci. **51:** 164. 1933; Holtt. Rev. Fl. Mal. **2:** 98. 1954.

PUKET. Trang : Khao Chong, moist rocks by stream in evergreen forest, 100-200m alt., T-217.

Malay Peninsula, Sumatra to Tahiti.

Microgonium Pr.

1. **Microgonium bimarginatum** v. d. Bosch, Hymen. Jav. 7. 1861. — *Trichomanes bimarginatum* v. d. Bosch; Copel. Phil. Journ. Sci. **51:** 208. 1933; Holtt. Rev. Fl. Mal. **2:** 92. 1954, Dansk Bot. Ark. **20:** 17. 1961.

PUKET. Trang : Khao Chong, moist rocks by stream in dense evergreen forest, 100-200m alt., T-215.

Malay Peninsula to Ceylon and Samoa.

Crepidomanes Pr.

1. **Crepidomanes bipunctatum** (Poir.) Copel. Phil. Journ. Sci. **67**: 59. 1938. —
Trichomanes bipunctatum Poir; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 2.
1929; Copel. Phil. Journ. Sci. **51**: 177. 1933; Seidenfaden, Nat. Hist. Bull. Siam
Soc. **19**: 86. 1958; Holtt. Rev. Fl. Mal. **2**: 99. 1954, Dansk Bot. Ark. **20**: 17. 1961.

PUKET. Trang: Khao Chong, on rocks by stream in deep shade in evergreen
forest, ca. 100m alt., T-176, T-216.

Palaeotropics.

2. **Crepidomanes** sp.

PUKET. Trang: Khao Chong, on wet rocks in deep shade by stream in evergreen
forest, ca. 150m alt., T-188.

This is similar in appearance to *C. nanophyllum* of Taiwan and the Ryukyus,
but decidedly different from the nominal species in the size and form of segments
and in the general habit. It is reasonable to consider this as a distinct species, but
a formal description may better be given in another literature.

Cephalomanes Pr.

1. **Cephalomanes javanica** (Blume) v. d. Bosch, Hymen. Jav. 30. 1861. —
Trichomanes javanicum Blume; Christ, Bot. Tidsskr. **24**: 103. 1901; Copel. Phil.
Journ. Sci. **51**: 246. 1933; Holtt. Rev. Fl. Mal. **2**: 102. 1954, Dansk Bot. Ark. **20**: 17.
1961.

PUKET. Trang: Khao Chong, moist ground by stream in deep shade in evergreen
forest, ca. 100m alt., T-175, T-219.

India to Java.

CYATHEACEAE

Cyathea Smith

1. **Cyathea contaminans** (Hook.) Copel. Phil. Journ. Sci. **4C**: 60. 1909; Holtt.
Rev. Fl. Mal. **2**: 119. 1954, Fl. Malesiana II, **1**(2): 135. 1963.

PUKET. Trang: Khao Chong, open place by stream at edge of evergreen forest,
ca. 100m alt., T-194.

Throughout Malaysia. First record for Thailand.

2. **Cyathea gigantea** (Wall. ex Hook.) Holtt. Gard. Bull. S. S. **8**: 318. 1935,
Rev. Fl. Mal. **2**: 128. 1954, Dansk Bot. Ark. **20**: 18. 1961, Fl. Malesiana II. **1**(2): 124.
1963.

PAYAP. Chiangmai: Doi Sutep, stream-side bank in evergreen forest, ca. 1000m
alt., T-46.

Eastern Himalayas, Thailand and Malaya.

POLYPODIACEAE

Platycterium Desv.

1. **Platycterium coronarium** (König) Desv. Prodr. 213. 1827; Holtt. Rev. Fl. Mal. **2**: 138. 1954.

Platycterium biforme (Sw.) Blume; Christ, Bot. Tidsskr. **24**: 105. 1901.

PUKET. Trang : Khao Chong, in rubber tree plantation, ca. 100m alt., T-223. Malaysia throughout, north to Annam, Thailand and Burma.

Pyrrosia Mirb.

1. **Pyrrosia nummularifolia** (Sw.) Ching, Bull. Chin. Bot. Soc. **1**: 47. 1935; Holtt. Rev. Fl. Mal. **2**: 144. 1954.

PUKET. Trang : Khao Chong, on tree trunk at edge of evergreen forest, ca. 100m alt., T-196.

North India, Malay Peninsula, Malaysia, not as yet known from New Guinea. First record for Thailand.

2. **Pyrrosia adnascens** (Sw.) Ching, Bull. Chin. Bot. Soc. **1**: 45. 1935; Holtt. Rev. Fl. Mal. **2**: 144. 1954, Dansk Bot. Ark. **20**: 18. 1961; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 86. 1958. — *Cyclophorus adnascens* (Sw.) Desv.; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 7. 1929. — *Niphobolus adnascens* (Sw.) Kaulf.; Christ, Bot. Tidsskr. **24**: 105. 1901.

PAYAP. Chiangmai : Mae Klang water fall, north of Chom Thong, on dry rock in deciduous forest, ca. 300m alt., T-106. NAKAWN SRITAMARAT. Patthalung: Patthalung station, on trunk at low land, T-225.

India to South China, Taiwan and the Ryukyus, through Malaysia to Polynesia.

3. **Pyrrosia varia** (Kaulf.) Farw. Amer. Midl. Nat. **12**: 302. 1931; Holtt. Rev. Fl. Mal. **2**: 146. 1954.

PUKET. Trang : Khao Chong, on dry rock by stream at edge of evergreen forest, ca. 100m alt., T-200.

Throughout Malaysia, and on the Malay Peninsula. First record for Thailand.

4. **Pyrrosia longifolia** (N. L. Burm.) Morton, Journ. Washington Acad. Sci. **36**: 168. 1946; Holtt. Rev. Fl. Mal. **2**: 148. 1954, Dansk Bot. Ark. **20**: 19. 1961; Seidenfaden, Nat. Hist. Bull. Siam. Soc. **19**: 86. 1958.

Cyclophorus acrostichoides (G. Forst.) Pr.; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 7. 1929. — *Niphobolus acrostichoides* (G. Forst.) G. Richt.; Christ, Bot. Tidsskr. **24**: 105. 1901.

NAKAWN SRITAMARAT. Patthalung : edge of Patthalung, on trunk of a palm, at lowland, T-226.

Malaysia to Queensland and Polynesia, north to the Malay Peninsula, Tonkin and Hainan.

Drymoglossum Pr.

1. **Drymoglossum piloselloides** (L.) Pr. Tent. Pterid. 227. 1836; Christ, Bot. Tidsskr. **24**: 105. 1901; C. Chr. Dansk Bot. Ark. **6**(3): 86. 1929; Holtt. Rev. Fl. Mal. **2**: 149. 1954, Dansk Bot. Ark. **20**: 19. 1961; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 86. 1958.

Drymoglossum heterophyllum auct. non (L.) Trimen; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 8. 1929.

PUKET. Trang : Trang, on tree trunk, at lowland, T-141.

Malaysia generally, north to northeast India and Hainan.

Colysis Pr.

1. **Colysis pedunculata** (Hook. et Grev.) Ching, Bull. Fan Mem. Inst. Biol. **4**: 321. 1933; Holtt. Rev. Fl. Mal. **2**: 160. 1954.

PUKET. Trang : Khao Chong, on wet rock on stream bed in evergreen forest, 100-200m alt., T-222.

Northeast India and Yunnan, south to the Malay Peninsula. First record for Thailand.

Fertile fronds are very variable; stipe generally equal to or a little longer than the sterile frond, the blade narrowly lanceolate (14 by 1.5 cm), lanceolate (6-9 by 1.5-2 cm) or ovate-oblong (10 by 3.5 cm), the margin subentire to largely and rather irregularly crenate. The texture of fertile blade is rather soft fleshy herbaceous, therefore membranous when dry, much paler in colour than the sterile; Holttum is quite right in stating that fertile fronds are apparently produced seasonally.

Loxogramme Pr.

1. **Loxogramme subecostata** (Hook.) C. Chr. Gard. Bull. S. S. **4**: 405. 1929; Holtt. Rev. Fl. Mal. **2**: 169. 1954.

PUKET. Trang : Khao Chong, on rock by stream in evergreen forest, ca. 100m alt., T-172.

Borneo, Sumatra and Malay Peninsula. First record for Thailand.

Sori of this species are very variable in their length, but the position of their exterior end is rather constant, thus the sori, when they are very short and nearly round, are arranged in a line 1-2mm below the margin (in dried condition). In our Thailand specimens the sori are 1.5 (nearly round) to 8mm in length.

Microsorium Link

1. **Microsorium punctatum** (L.) Copel. Univ. Calif. Bufl. Bot. **16**: 111. 1929; Holtt. Rev. Fl. Mal. **2**: 179. 1954, Dansk Bot. Ark. **20**: 20. 1961; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 86. 1958; Tagawa, Journ. Jap. Bot. **38**: 327. 1963. — *Polypodium punctatum* (L.) Sw., non Thunb. 1784; Christ, Bot. Tidsskr. **24**: 105. 1901.

PUKET. Trang : Trang, on tree trunk in rubber tree plantation, at lowland,

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T-140; Khao Chong, on rocks in clearing of evergreen forest, ca. 100m alt., T-221.
Widely distributed in the tropics of the Old World.

2. **Microsorium pteropus** (Blume) Copel. Univ. Calif. Publ. Bot. **16**: 112. 1929; Holtt. Rev. Fl. Mal. **2**: 172. 1954.

PUKET. Trang : Khao Chong, on rocks by stream in evergreen forest, at 100-200m alt., T-195.

India generally, east to South China and Taiwan, south to Malaysia. First record for Thailand.

Our example represents f. *minor* (Bedd.) Ching, l.c. with small and simple fronds.

3. **Microsorium heterocarpum** (Blume) Ching, Bull. Fan Mem. Inst. Biol. **4**: 295. 1933; Holtt. Rev. Fl. Mal. **2**: 178. 1954, Dansk Bot. Ark. **20**: 20. 1961.

PUKET. Trang : Khao Chong, on moist rock by stream in evergreen forest, 100-200m alt., T-206.

Malaysia, Malay Peninsula, also known previously from northern Thailand.

4. **Microsorium scolopendrium** (N. L. Burm.) Copel. Univ. Calif. Publ. Bot. **16**: 112. 1929. — *Phymatodes scolopendria* (N. L. Burm.) Ching, Contr. Inst. Bot. Nat. Acad. Peiping **2**: 63. 1933; Holtt. Rev. Fl. Mal. **2**: 191. 1954; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 86. 1958.

Pleopeltis phymatodes (L.) Moore; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 6. 1929.

PUKET. Trang : Trang, on dry rock in light shade on hillside, at lowland, T-142.
Widely distributed in the tropics of the Old World.

5. **Microsorium nigrescens** (Blume) Copel. Occ. Pap. Bishop Mus. **14**: 74. 1938. — *Polypodium nigrescens* Blume; Christ, Bot. Tidsskr. **24**: 105. 1901. — *Phymatodes nigrescens* (Blume) J. Smith; Holtt. Rev. Fl. Mal. **2**: 193. 1954; Dansk Bot. Ark. **20**: 21. 1961; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 86. 1958.

PUKET. Trang : Khao Chong, on rock by stream in evergreen forest, 100-200m alt., T-207.

Throughout Malaysia, east to Polynesia, north to Annam, Cambodia, Malay Peninsula, Ceylon and South India.

Drynaria J. Smith

1. **Drynaria quercifolia** (L.) J. Smith, Journ. Bot. **3**: 398. 1841; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 6. 1929; C. Chr. Contr. U. S. Nat. Herb. **26**: 335. 1931; Holtt. Rev. Fl. Mal. **2**: 182. 1954.

PUKET. Trang : Trang, rock on dry hillside, at lowland, T-148. NAKAWN SRITAMARAT. Patthalung : off-shore island Koh Si Koh Har in Lake Talesap Tonnai, near Phatalung Fisheries Station, Egerod 2063.

India to Hainan and Indo-China, through Malaysia to Fiji and tropical Australia.

2. **Drynaria sparsisora** (Desv.) Moore, Ind. Fil. 348. 1862; Holtt. Rev. Fl. Mal. **2**: 183. 1954.

Drynaria linnaei (Bory) Bedd.; Christ, Bot. Tidsskr. **24**: 106. 1901.

PUKET. Trang : Trang, on rock on dry hillside, at lowland, T-148bis; Khao Chong, on tree trunk in evergreen forest, 100-200m alt., T-179.

Ceylon, Malay Peninsula, through Malaysia to Polynesia and tropical Australia.

Myrmecophila (Christ) Ching

1. **Myrmecophila sinuosa** (Wall. ex Hook.) Ching, Sunyatsenia **5**: 259. 1940. — *Polypodium sinuosum* Wall. ex Hook.; Christ, Bot. Tidsskr. **24**: 105. 1901. — *Phymatodes sinuosa* (Wall. ex Hook.) J. Smith; Holtt. Rev. Fl. Mal. **2**: 190. 1954, Dansk Bot. Ark. **20**: 21. 1961; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 86. 1958.

PUKET. Trang : Trang, on tree trunk in village, T-143.

Sumatra to the New Hebrides and Solomon Islands, north to Malay Peninsula and the Philippines.

THELYPTERIDACEAE

Thelypteris Schmidel

1. **Thelypteris polycarpa** (Blume) K. Iwats. Mem. Coll. Sci. Univ. Kyoto B, **31**: 32. 1964. — *Cyclosorus polycarpus* (Blume) Holtt. Rev. Fl. Mal. **2**: 283. 1954.

PUKET. Trang : Khao Chong, moist ground by stream in evergreen forest, ca. 100m alt., T-163.

Thailand to Malaysia.

2. **Thelypteris tuberculifera** (C. Chr.) Ching, Bull. Fan Mem. Inst. Biol. **6**: 295. 1936.

PAYAP. Chiangmai : Doi Sutep, wet ground by small stream in light deciduous forest, ca. 900m alt., T-52.

Not yet recorded from Thailand, previously known from Assam and Yunnan.

3. **Thelypteris ciliata** (Wall. ex Benth.) Ching, Bull. Fan Mem. Inst. Biol. **6**: 289. 1936; Holtt. Rev. Fl. Mal. **2**: 250. 1954, Dansk Bot. Ark. **20**: 22. 1961.

PAYAP. Chiangmai : Doi Sutep, on wet mossy stone on stream bed in evergreen forest, ca. 1000m alt., T-39, T-51.

Nepal to Malaya.

4. **Thelypteris torresiana** (Gaud.) Alston, Lilloa **30**: 111. 1960; K. Iwats. Journ. Jap. Bot. **38**: 314. 1963.

Aspidium setigerum (Blume) Kuhn; Christ, Bot. Tidsskr. **20**: 108. 1901.

Thelypteris uliginosa (Kunze) Ching, Bull. Fan Mem. Inst. Biol. **6**: 342. 1936; Holtt. Rev. Fl. Mal. **2**: 241. 1954.

PAYAP. Chiangmai : Mae Klang water fall, north of Chom Thong, open grassy roadside bank, ca. 300m alt., T-95.

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Japan to Australia, throughout Southeast Asia.

5. ***Thelypteris dentata*** (Forssk.) St. John, Amer. Fern Journ. **26**: 44. 1936. — *Cyclosorus dentatus* (Forssk.) Ching, Bull. Fan Mem. Inst. Biol. **8**: 206. 1938; Holtt. Dansk Bot. Ark. **20**: 22. 1961.

PAYAP. Chiangmai : foot of Doi Suteh, wet grassy ground by waterhole at lowland, T-38; Doi Suteh, open grassy ground at edge of deciduous forest, ca. 800m alt., T-50, T-53; Mae Klang water fall, north of Chom Thong, open grassy road-side bank, ca. 300m alt., T-99, T-100. PUKET. Trang : Trang, on dry hill-side at lowland, T-149.

Pantropic.

6. ***Thelypteris parasitica*** (L.) K. Iwats. Journ. Jap. Bot. **38**: 315. 1963. — *Aspidium parasiticum* (L.) Sw.; Christ, Bot. Tidsskr. **20**: 109. 1901. — *Cyclosorus parasiticus* (L.) Farw.; Ching, Bull. Fan Mem. Inst. Biol. **8**: 201. 1938; Holtt. Rev. Fl. Mal. **2**: 281. 1954.

PAYAP. Chiangmai : Mae Klang water fall, north of Chom Thong, open grassy roadside bank, ca. 300m alt., T-101. PUKET. Trang : Trang, on dry hill-side at lowland, T-150.

Tropics and subtropics of East Asia.

7. ***Thelypteris papilio*** (Hope) K. Iwats. Mem. Coll. Sci. Univ. Kyoto B, **31**: 175. 1965.

PAYAP. Chiangmai : Doi Suteh, by small stream at edge of evergreen forest, ca. 900m alt., T-36.

Himalayas, Ceylon and Taiwan. A new record for the Flora of Thailand.

8. ***Thelypteris gongylodes*** (Schkuhr) Small, Ferns S. E. States 248. 1938. — *Dryopteris gongylodes* (Schkuhr) C. Chr.; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 87. 1958. — *Cyclosorus gongylodes* (Schkuhr) Link; Ching, Bull. Fan Mem. Inst. Biol. **8**: 186. 1938; Holtt. Rev. Fl. Mal. **2**: 261. 1954, Dansk Bot. Ark. **20**: 23. 1961.

PAYAP. Chiangmai : Mae Klang water fall, north of Chom Thong, open swampy place, ca. 300m alt., T-96, T-97.

Pantropic.

9. ***Thelypteris interrupta*** (Willd.) K. Iwats. Journ. Jap. Bot. **38**: 314. 1963. — *Cyclosorus interruptus* (Willd.) H. Ito; Ching, Bull. Fan Mem. Inst. Biol. **8**: 184. 1938; Holtt. Rev. Fl. Mal. **2**: 262. 1954, Dansk Bot. Ark. **20**: 23. 1961.

Dryopteris pteroides (Retz.) O. Ktze. p. p.; C. Chr. Contr. U. S. Nat. Herb. **26**: 184. 1931. — *Nephrodium pteroides* (Retz.) J. Smith; Ostenfeld, Bull. Herb. Boiss. II, **5**: 721. 1905; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 5. 1929.

Cyclosorus interruptus var. *hirsutus* Ching, l. c. 186.

PAYAP. Chiangmai : Doi Suteh, rather dry slope in evergreen forest, ca. 1000m

alt., T-40.

Ceylon to the Pacific Islands and throughout Malaysia.

10. **Thelypteris extensa** (Blume) Morton, Amer. Fern Journ. **49**: 113. 1959. — *Nephrodium extensum* (Blume) Moore; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 5. 1929. — *Cyclosorus extensus* (Blume) Ching, Bull. Fan Mem. Inst. Biol. **8**: 182. 1938; Holtt. Rev. Fl. Mal. **2**: 264. 1954, Dansk Bot. Ark. **20**: 23. 1961.

PUKET. Trang : Khao Chong, rather dry place in light shade in evergreen forest, ca. 100m alt., T-164.

Ceylon to the Philippines.

11. **Thelypteris crinipes** (Hook.) K. Iwats. Journ. Jap. Bot. **38**: 315. 1963.

PAYAP. Chiangmai : Doi Suteh, by stream at edge of jungle, ca. 900m alt., T-54; Mae Klang water fall, north of Chom Thong, by small stream in light shade, ca. 300m alt., T-98.

Himalayas to Thailand.

12. **Thelypteris subelata** (Baker) K. Iwats. Journ. Jap. Bot. **38**: 315. 1963. — *Cyclosorus subelatus* (Baker) Ching, Bull. Fan Mem. Inst. Biol. **8**: 224. 1938.

PAYAP. Chiangmai : Doi Suteh, evergreen forest by stream, ca. 1000m alt., T-37. Continental Southeast Asia.

13. **Thelypteris megaphylla** (Mett.) K. Iwats. Mem. Coll. Sci. Univ. Kyoto B, **31**: 34. 1964. — *Cyclosorus megaphyllus* (Mett.) Ching, Bull. Fan Mem. Inst. Biol. **8**: 225. 1938; Holtt. Rev. Fl. Mal. **2**: 268. 1954.

PUKET. Trang : Khao Chong, clearing of evergreen forest, ca. 100m alt., T-212. Malaysia. First record for the Thailand fern flora.

14. **Thelypteris truncata** (Poir.) K. Iwats. Mem. Coll. Sci. Univ. Kyoto B, **31**: 33. 1964. — *Cyclosorus truncatus* (Poir.) Farw.; Holtt. Rev. Fl. Mal. **2**: 266. 1954, Dansk Bot. Ark. **20**: 23. 1961.

PAYAP. Chiangmai : Mae Klang water fall, north of Chom Thong, by small stream in light shade, ca. 300m alt., T-102; Doi Suteh, wet place by stream in clearing of evergreen forest, ca. 1000m alt., T-35.

Throughout the Old World tropics.

15. **Thelypteris multilineata** (Wall. ex Hook.) Morton, Amer. Fern Journ. **49**: 113. 1959; K. Iwats. Journ. Jap. Bot. **38**: 315. 1963. — *Abacopteris multilineata* (Hook.) Ching, Bull. Fan Mem. Inst. Biol. **8**: 253. 1938; Holtt. Rev. Fl. Mal. **2**: 297. 1954, Dansk Bot. Ark. **20**: 23. 1961.

Dryopteris moulmeinensis (Bedd.) C. Chr. Ind. Fil. 278. 1905, Contr. U.S. Nat. Herb. **26**: 330. 1931.

PAYAP. Chiangmai : Doi Suteh, in evergreen forest by stream, ca. 1000m alt., T-42.

Continental Southeast Asia.

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16. **Thelypteris menisciocarpa** (Blume) K. Iwats. Acta Phytotax. Geobot. **21**: 171. 1965. — *Abacopteris menisciocarpa* (Blume) Holtt. Rev. Fl. Mal. **2**: 290. 1954, Dansk Bot. Ark. **20**: 23. 1961.

PUKET. Trang : Khao Chong, on wet rocks by stream in evergreen forest, ca. 100m alt., T-167, T-220.

Western Malaysia.

17. **Thelypteris urophylla** (Wall. ex Hook.) K. Iwats. comb. nov. — *Polypodium urophyllum* Wall. ex Hook. Sp. Fil. **5**: 9. 1863. — *Nephrodium urophyllum* (Hook.) Keys.; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 5. 1929. — *Abacopteris urophylla* (Hook.) Ching, Bull. Fan Mem. Inst. Biol. **8**: 251. 1938; Holtt. Rev. Fl. Mal. **2**: 296. 1954, Dansk Bot. Ark. **20**: 24. 1961.

PUKET. Trang : Khao Chong, rather dry slope in evergreen forest, ca. 150m alt., T-110, T-166.

Malay Peninsula and Sumatra.

18. **Thelypteris rubra** (Ching) K. Iwats. Journ. Jap. Bot. **38**: 315. 1963. — *Abacopteris rubra* (Ching) Ching, Bull. Fan Mem. Inst. Biol. **8**: 245. 1938; Holtt. Dansk Bot. Ark. **20**: 23. 1961.

PAYAP. Chiangmai : Doi Suteh, evergreen forest by stream, ca. 1000m at., T-41, T-55.

Continental South Asia.

DENNSTAEDTIACEAE

(Dennstaedtioideae)

Microlepia Pr.

1. **Microlepia platyphylla** (Don) J. Smith, London Journ. Bot. **1**: 427. 1842.

PAYAP. Chiangmai : Doi Suteh, by small stream in light deciduous forest, ca. 900m alt., T-65.

North India east to Southwest China and Taiwan, south to Ceylon, Thailand and Annam, also in the Philippines. First record for Thailand.

A detailed description has been given by Nayar & Kaur, Bull. Nat. Bot. Gard. Lucknow no. 79. 12. 1963.

2. **Microlepia speluncae** L. Sp. Pl. **2**: 1093. 1753; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 3. 1929; C. Chr. Contr. U.S. Nat. Herb. **26**: 332. 1931; Holtt. Rev. Fl. Mal. **2**: 314. 1954, Dansk Bot. Ark. **20**: 24. 1961.

var. **pubescens** (Hook.) Sledge, Kew Bull. **1956**: 525. 1957.

Microlepia speluncae var. *villosissima* C. Chr. Gard. Bull. S. S. **4**: 399. 1929; Holtt. Rev. Fl. Mal. **2**: 315. 1954.

PAYAP. Chiangmai : Doi Suteh, in evergreen forest by stream, ca. 900m alt., T-63. PUKET. Trang : Khao Chong, moist ground in clearing of evergreen forest,

ca. 100m alt., T-199.

Widely distributed in the tropics of the Old World.

3. **Microlepia trapeziformis** (Roxb.) Kuhn, Chaetopt. 347. 1882; Holtt. Rev. Fl. Mal. **2**: 313. 1954; Sledge, Kew Bull. **1956**: 526. 1957.

PAYAP. Chiangmai : Doi Sutep, moist ground in evergreen forest by stream, ca. 900m alt., T-64.

Widely spread from Ceylon and India to Southwest China and Taiwan, south to Sumatra and Java.

We are not so sure of this identification.

Pteridium Gled. ex Scopoli

1. **Pteridium aquilinum** (L.) Kuhn var. **wightianum** (J. Ag.) Tryon, Rhodora **43**: 22. 1941.

Pteridium aquilinum sensu lat.; C. Chr. Contr. U.S Nat. Herb. **26**: 333. 1931; Holtt. Rev. Fl. **2**: 389. 1954, Dansk Bot. Ark. **20**: 26. 1961.

PAYAP. Chiangmai : Doi Sutep, in clearing of dry deciduous forest, ca. 900m alt., T-62.

Northwest India to China and Taiwan, south to Ceylon, Java and New Guinea.

(Davallioideae)

Davallia Smith

1. **Davallia denticulata** (N. L. Burm.) Mett. ex Kuhn, Fil. Deck. 27. 1867; Holtt. Rev. Fl. Mal. **2**: 359. 1954; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 86. 1958.

Davallia elegans Sw.; Christ, Bot. Tidsskr. **24**: 110. 1901.

PUKET. Trang : Khao Chong, on dry rock in clearing of evergreen forest, ca. 100m alt., T-198.

Tropical Asia and Polynesia.

(Oleandroideae)

Nephrolepis Schott

1. **Nephrolepis** sp.

PUKET. Trang : Khao Chong, open place at edge of evergreen forest, ca. 100m alt., T-189.

Small sterile plant of a *Nephrolepis* like *N. pilosula* v. A. v. Ros.

(Pteridoideae)

Pteris L.

1. **Pteris vittata** L. Sp. Pl. **2**: 1074. 1753; Holtt. Rev. Fl. Mal. **2**: 396. 1954, Dansk Bot. Ark. **20**: 27. 1961.

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Pteris longifolia auct. non L.; Christ, Bot. Tidsskr. **24**: 106. 1901.

PAYAP. Chiangmai : Mae Klang water fall, north of Chom Thong, open grassy roadside bank, ca. 300m alt., T-94. PUKET. Trang : Trang, open rocky slope on dry hillside, at lowland, T-144.

Widely distributed in the tropics and subtropics of the Old World.

2. **Pteris decrescens** Christ, Bull. Acad. Géogr. Bot. **16**: 244. 1906; Holtt. Dansk Bot. Ark. **20**: 27. 1961.

PAYAP. Chiangmai : Doi Sutep, on steep slope in rather dry mixed forest, ca. 1000m alt., T-24.

Burma to South China, south to Thailand and Cochinchina.

3. **Pteris biaurita** L. Sp. Pl. **2**: 1076. 1753; Christ, Bot. Tidsskr. **24**: 106. 1901, as *P. quadriaurita* var.; C. Chr. Contr. U.S. Nat. Herb. **26**: 333. 1931; Holtt. Rev. Fl. Mal. **2**: 407. 1954, Dansk Bot. Ark. **20**: 27. 1961.

PAYAP. Chiangmai : Doi Sutep, steep slope in rather dry mixed forest, ca. 1000m alt., T-25.

Widely distributed in the tropics and subtropics of the World.

Our collection can not be referred to *P. linearis* Poir., for the basal veins in our examples are invariably joined in a narrow (not triangular) costal arc with several excurrent simple (rarely furcate) branches. As a matter of convenience the name *P. biaurita* originally given to a West Indian plant is here used in the traditional sense for the present.

4. **Pteris longipes** Don, Prodr. Fl. Nepal. 15. 1825.

PAYAP. Chiangmai : Doi Sutap, evergreen forest, ca. 1000m alt., T-23.

North India to China and Taiwan, also in northern Thailand, Tonkin and the Philippines. First record for Thailand.

5. **Pteris wallichiana** J. Ag. Rec. Pterid. 69. 1839; C. Chr. Contr. U.S. Nat. Herb. **26**: 333. 1931.

PAYAP. Chiangmai : Doi Sutep, wet ground by small stream in light deciduous forest, ca. 900m alt., T-61, T-61 bis.

North India through China to Japan, south to northern Thailand and Laos, also reported from Java, Borneo and Celebes.

Acrostichum L.

1. **Acrostichum aureum** L. Sp. Pl. **2**: 1069. 1753; Holtt. Rev. Fl. Mal. **2**: 409. 1954, Dansk Bot. Ark. **20**: 27. 1961; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 86. 1958.

KRUNGTEP. Samut Prakan : Samut Prakan to Bang Pakong (in Chachoengsao), in mangrove swamp, T-114. PRACHINBURI. Chachoengsao : Bang Pakong to Chachoengsao. open swamp by canal, at sea level, T-108, T-109 (young plant bearing simple and bi- or trifoliate fronds).

Pantropic.

Stenochlaena J. Smth

1. **Stenochlaena palustris** (N. L. Burm.) Bedd. Ferns Brit. Ind. Suppl. 26. 1876; Christ, Bot. Tidsskr. **24**: 107. 1901; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 8. 1929; Holtt. Gard. Bull. S.S. **5**: 254. 1932, Rev. Fl. Mal. **2**: 412. 1954, Dansk Bot. Ark. **20**: 27. 1961.

PUKET. Trang : Trang, on tree trunk in rubber tree plantation, at lowland, T-147; Khao Chong, scandent high up on tree trunk in evergreen forest, 100-200m alt., T-205.

Widely distributed from southern and northern India through Malaysia to Australia and Polynesia.

(Asplenoideae)

Asplenium L.

1. **Asplenium obscurum** Blume, Fnum. Pl. Jav. 181. 1828.

PAYAP. Chiangmai : Doi Sutep, on wet rocky cliffs in deep shade in evergreen forest, ca. 900m alt., T-59.

Madagascar, Java, Thailand. Annam, Tonkin. Taiwan. First record for Thailand.

2. **Asplenium squamulatum** Blume, Enum. Pl. Jav. 174. 1828; Holtt. Rev. Fl. Mal. **2**: 426. 1954.

PUKET. Trang : Khao Chong, on wet mossy rocks by stream in evergreen forest, ca. 100m alt., T-192.

Malaysia and Malay Peninsula. First record for Thailand.

3. **Asplenium nidus** L. Sp. Pl. **2**: 1079. 1753; E. Smith, Journ. Siam Soc. Nat. Hist. Suppl. **8**: 4. 1929; C. Chr. Contr. U.S. Nat. Herb. **26**: 332. 1931; Holtt. Rev. Fl. Mal. **2**: 419. 1954, Dansk Bot. Ark. **20**: 28. 1961.

PUKET. Trang : Khao Chong, on tree trunk at edge of evergreen forest, ca. 100m alt., T-209.

Widely distributed in the tropics of the Old World.

(Blechnoideae)

Blechnum L.

1. **Blechnum orientale** L. Sp. Pl. **2**: 1077. 1753; Christ, Bot. Tidsskr. **24**: 107. 1901; C. Chr. Contr. U.S. Nat. Herb. **26**: 333. 1931; Holtt. Rev. Fl. Mal. **2**: 446. 1954, Dansk Bot. Ark. **20**: 29. 1961; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 86. 1958.

PUKET. Trang : Khao Chong, open roadside bank, ca. 100m alt., T-180.

Throughout tropical Asia, Australia and Polynesia.

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(Lomariopsidoideae)

Bolbitis Schott

1. **Bolbitis virens** (Wall. ex Hook. et Grev.) Schott, Gen. Fil. t. 14. 1834; Holtt. Rev. Fl. Mal. **2**: 468. 1954. — *Campium virens* (Hook. et Grev) Pr.; Copel. Phil. Journ. Sci. **37**: 388. 1928.

PAYAP. Chiangmai : Doi Suteh, moist ground in evergreen forest by stream, ca. 900m alt., T-57, ca. 1000m alt., T-44, T-45. PUKET. Trang : Khao Chong, moist slope in evergreen forest, 100-200m alt., T-214.

Sikkim Himalayas to Java through Thailand and Malaya. First Record for Thailand.

T-57 is a monstrous form with imperfectly acrostichoid fertile leaf.

2. **Bolbitis heteroclita** (Pr.) Ching in C. Chr. Ind. Fil. Suppl. III, 48. 1934; Holtt. Rev. Fl. Mal. **2**: 462. 1954, Dansk Bot. Ark. **20**: 30. 1961. — *Campium heteroclitum* (Pr.) Copel. Phil. Journ. Sci. **37**: 359. 1928.

PUKET. Trang : Khao Chong, on wet rocks in evergreen forest, 100-200m alt., T-211.

Himalayas to New Guinea through Malaysia.

3. **Bolbitis diversifolia** (Blume) Schott, Gen. Fil. t. 14. 1834; Holtt. Rev. Fl. Mal. **2**: 465. 1954.

Campium subsimplex Copel. Phil. Journ. Sci. **37**: 356. 1928.

PUKET. Trang : Khao Chong, on wet mossy rocks by stream in evergreen forest, 100-200m alt., T-213.

Thailand, Malaya, Sumatra to the Philippines.

4. **Bolbitis sinensis** (Baker) K. Iwats. Acta Phytotax. Geobot. **18**: 49. 1959. — *Egenolfia sinensis* (Baker) Maxon; Ching, Bull. Fan Mem. Inst. Biol. **2**: 305. 1931; Holtt. Dansk Bot. Ark. **20**: 30. 1961.

PAYAP. Chiangmai : Doi Suteh, rather dry slope in evergreen forest, ca. 1000m alt., T-43, T-56.

Himalayas, South China, Thailand and Tonkin.

5. **Bolbitis appendiculata** (Willd.) K. Iwats. Acta Phytotax. Geobot. **18**: 48. 1959. — *Egenolfia appendiculata* (Willd.) J. Smith; Ching, Bull. Fan Mem. Inst. Biol. **2**: 308. 1931; Holtt. Rev. Fl. Mal. **2**: 459. 1954, Dansk Bot. Ark. **20**: 29. 1961.

PUKET. Trang : Khao Chong, on rocks by stream in evergreen forest, ca. 100m alt., T-170, T-210.

North India to Malaysia throughout.

(Dryopteridoideae)

Polystichum Roth

1. **Polystichum biaristatum** (Blume) Moore, Ind. Fil. 86. 1858; C. Chr. Contr. U. S. Nat. Herb. **26**: 287. 1931; Tardieu et C. Chr. in Lecomte, Fl. Gén. Indo-Chine **7**(2): 342. 1941.

PAYAP. Chiangmai: Doi Suteh, steep slope in rather dry mixed forest, ca. 1000m alt., T-26, T-28.

North India, Upper Burma, Yunnan, Taiwan, Annam, Thailand and Java.

(Tectarioideae)

Tectaria Cav.

1. **Tectaria coadunata** (J. Smith) C. Chr. Contr. U. S. Nat. Herb. **26**: 331. 1931; Ching, Sinensia **2**: 18. 1931. — *Tectaria macrodonta* (Fée) C. Chr. Ind. Fil. Suppl. III. 181. 1934; Holtt. Rev. Fl. Mal. **2**: 505. 1954.

PAYAP. Chiangmai: Doi Suteh, wet ground in evergreen forest by stream, ca. 900m alt., T-58.

India generally, east to South China and Taiwan, west to Madagascar and tropical Africa; reported from northern Malaya and Malaysia, probably in error.

2. **Tectaria angulata** (Willd.) C. Chr. Ind. Fil. Suppl. III. 177. 1934; Holtt. Rev. Fl. Mal. **2**: 511. 1954.

PUKET. Trang: Khao Chong, rather dry ground in evergreen forest, ca. 100m alt., T-174.

Malaysia to Malay Peninsula.

3. **Tectaria maingayi** (Baker) C. Chr. Ind. Fil. Suppl. III. 182. 1934; Holtt. Rev. Fl. Mal. **2**: 513. 1954, Dansk Bot. Ark. **20**: 31. 1961.

PUKET. Trang: Khao Chong, rather dry ground at edge of evergreen forest, ca. 100m alt., T-171; Khao Chong, rather dry slope in evergreen forest, 100-200m alt., T-203.

Malay Peninsula, Sumatra.

Pteridrys C. Chr. et Ching

1. **Pteridrys syrmatica** (Willd.) C. Chr. et Ching, Bull. Fan Mem. Inst. Biol. **5**: 131. 1934; Holtt. Rev. Fl. Mal. **2**: 530. 1954; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 87. 1958.

PUKET. Trang: Khao Chong, moist ground in deep shade in evergreen forest, 100-200m alt., T-208.

Ceylon, Malay Peninsula, Cochin-China and Malaysia.

Arcypteris Underw.

1. **Arcypteris irregularis** (Pr.) Ching, Sunyatsenia **5**: 251. 1940; Holtt. Reinwardtia **1**: 193. 1951; Rev. Fl. Mal. **2**: 538. 1954, Dansk Bot. Ark. **20**: 31. 1961.

PUKET. Trang: Khao Chong, evergreen forest by stream, ca. 100m alt., T-167, T-197.

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Malaysia to Malay Peninsula and Cambodia.

(Athyrionaceae)

Athyrium Roth

1. **Athyrium dissitifolium** (Baker) C. Chr. Contr. U.S. Nat. Herb. **26**: 296, 332. 1931.

PAYAP. Chiangmai : Doi Sutep, rather dry slope in evergreen forest, ca. 1000m alt., T-29.

Yunnan and northern Thailand.

Microchlaena Ching

1. **Microchlaena yunnanensis** (Christ) Ching, Bull. Fan Mem. Inst. Biol. **8**: 325. 1938.

PAYAP. Chiangmai : Doi Sutep, rather dry rocky slope in light deciduous forest, ca. 900m alt., T-60.

From Nepal and Assam to Yunnan, Kweichow and Kwangsi, south to Kengtung State in Burma and northern Thailand. First record for Thailand.

The identification was made from a comparison with two Assam specimens: G. Mann s. n. Oct. 1888 and May 1889, both from Bishop Falls, Shillong, Khasi Hills, 4000 ft.

This species has been placed in or near to *Dryopteris*, but its stipes have two large vascular strands at base, which unite upwards into a single strand U-shaped in cross section. This fact proves that it must be included in Athyrionaceae. The validity of *Microchlaena* may be argued in our separate paper.

The name, *Microchlaena yunnanensis*, is an illegitimate one, but, to avoid here a new name-combination, we use it traditionally.

Diplazium Sw.

1. **Diplazium sylvaticum** (Bory) Sw. Syn. Fil. 92. 1806; Christ, Bot. Tidsskr. **24**: 108. 1901; Holtt. Gard. Bull. S. S. **11**: 99. 1940.

Athyrium pinnatum (Blanco) Copel.; Holtt. Rev. Fl. Mal. **2**: 560. 1954, Dansk Bot. Ark. **20**: 32. 1961.

TUKET. Trang : Khao Chong, moist ground in evergreen forest, ca. 100m alt., T-201.

Mauritius, North and South India, Burma, North and Northeast Thailand, Malay Peninsula, Java, Philippines; recorded from South China but dubious.

2. **Diplazium dilatatum** Blume, Enum. Pl. Jav. 194. 1828; Holtt. Gard. Bull. S. S. **11**: 85. 1940. — *Athyrium dilatatum* (Blume) Holtt. Rev. Fl. Mal. **2**: 574, 1954.

PAYAP. Chiangmai : Doi Sutep, in evergreen forest by stream, ca. 1000m alt., T-31.

Ceylon and India, east to South China and Southwest Japan, south to Indo-China

and Malay Peninsula, through Malaysia to northern Australia.

3. **Diplazium simplicivenium** Holtt. Gard. Bull. S. S. **11**: 100. 1940. — *Athyrium simplicivenium* (Holtt.) Holtt. Rev. Fl. Mal. **2**: 573. 1954, Dansk Bot. Ark. **20**: 32. 1961.

PUKET. Trang : Khao Chong, moist ground in evergreen forest, ca. 100-200m alt., T-202.

Malay Peninsula and in North and Northeast Thailand.

4. **Diplazium polypodioides** Blume, Enum. Pl. Jav. 194. 1828.

Athyrium asperum (Blume) Copel.; Holtt. Rev. Fl. Mal. **2**: 571. 1954.

PAYAP. Chiangmai : Doi Suteh, in wet ground in open grassy place, ca. 900m alt., T-49; Mae Klang water fall, north of Chom Thong, by small stream in light shade, ca. 300m alt., T-105.

Ceylon and South India to Indo-China and Taiwan, Malay Peninsula, Malaysia generally.

Both of our specimens are much smaller, stipe 25-50cm long, blade 40-60cm long by 30-50cm broad, larger pinnules of lower pinnae to 8 by 1.5cm, T-105 being fully soriferous, T-49 sterile. Except their smaller size in all parts, our collection is a good match of typical *D. polypodioides*. Environmental circumstances appear to have a strong influence on size of this species.

5. **Diplazium esculentum** (Retz.) Sw. Schrad. Journ. Bot. **1801**(2): 312. 1803. — *Athyrium esculentum* (Retz.) Copel.; Holtt. Rev. Fl. Mal. **2**: 562. 1954.

PAYAP. Chiangmai : Mae Klang water fall, north of Chom Thong, open swampy place, ca. 300m alt., T-103, T-104; north of Chien Dao, Tuyama T-57393; near Ban Pasui, southeast of Mae Hongson, Tuyama T-58669; Mae Hoi, Tuyama OCUBE 228-44 and 226-58.

Tropical Asia generally, north to central and south China and southwest Japan.

ADIANTACEAE

Ceratopteris A. Brongn.

1. **Ceratopteris thalictroides** (L.) A. Brongn. Bull. Soc. Philom. **1821**: 186. 1822; Christ, Bot. Tidsskr. **24**: 104. 1901; Holtt. Rev. Fl. Mal. **2**: 578. 1954, Dansk Bot. Ark. **20**: 32. 1961; Seidenfaden, Nat. Hist. Bull. Siam Soc. **19**: 87. 1958.

NAKAWN SRITAMARAT. Patthalung : Rambhan, east of Patthalung, in shallow water in sunny place at canal-side, at sea level, T-224.

Widely distributed in the tropical to warm temperate regions of the Old World.

Pityrogramma Link

1. **Pityrogramma calomelanos** (L.) Link, Handb. Gewächse **3**: 20. 1833; Holtt. Rev. Fl. Mal. **2**: 593. 1954, Dansk Bot. Ark. **20**: 33. 1961.

PUKET. Trang : Khao Chong, open dry ground at edge of evergreen forest, ca.

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100m alt., T-173.

Pantropic, of tropical American origin.

Antrophyum Kaulf.

1. **Antrophyum callifolium** Blume, Enum. Pl. Jav. 111. 1828; Holtt. Rev. Fl. Mal. **2**: 605. 1954.

PUKET. Trang : Khao Chong, on wet rocks by stream in dense evergreen forest, ca. 100m alt., T-193.

Southeast tropical Asia. First record for Thailand.

Fronds are very variable in their size and shape. Our Thailand specimens match exactly with Malayan one (Molesworth–Allen 2796) but are slightly different from Javan ones (Raciborski s. n. and Ogata s. n.), in which the scales appear to be more densely toothed.

Vaginularia Fée

1. **Vaginularia trichoidea** Fée, 3^{me} Mém. 54. 1852. — *Monogramma trichoidea* (Fée) J. Smith ex Hook. Sp. Fil. **5**: 123. 1864; Holtt. Rev. Fl. Mal. **2**: 616. 1954.

PUKET. Trang : Khao Chong, on wet rock by stream in evergreen forest, 100–200m alt., T-204.

Philippines, Borneo and Malay Peninsula. First record for Thailand.

SALVINIACEAE

Salvinia Adans.

1. **Salvinia cucullata** Roxb. ex Bory; Holtt. Rev. Fl. Mal. **2**: 621. 1954.

PAYAP. Chiangmai : foot of Doi Sutep, in small waterhole, T-30. KRUNGTEP. Bangkok : Bangkhen, in small creek, T-227.

India to Indo-China.

Specimens are all small and sterile, and we are not so sure of this identification.